UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,039	07/03/2001	Seiichi Takeuchi	56937-029	2497

7590 08/11/2004

MCDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER	
RAO, ANAND SHASHIKANT	
ART UNIT	**PAPER NUMBER**
2613	7

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/897,039	Applicant(s) TAKEUCHI ET AL.	
	Examiner Andy S. Rao	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-38 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-38 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, 4-6, 11, 13-14, 19, and 32-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Shen et al., (hereinafter referred to as “Shen”).

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in a macro block (Shen: column 5, lines 45-60); leaving as is only one "non-zero" coefficient encountered first in scanning in said DCT block detected to contain said DCT coefficient and transcoding all the other DCT coefficients to "0" (Shen: column 7, lines 1-22); and outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 1.

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in an intra-macro block not accompanied by predictive coding (Shen: column 5, lines 45-60; column 8, lines 10-15); leaving as is only a DC coefficient in said DCT block detected to contain said DCT coefficient in said intra-macro block and transcoding all the other AC coefficients to "0" (Shen: column 7, lines 20-32); and outputting said bitstream having a code quality thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 4.

Shen discloses a bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in a macro block (Shen: column 5, lines 45-60); leaving as are only the first through N'th coefficients (N: natural number) in said DCT block detected to contain said DCT coefficient and transcoding all the other DCT coefficients to “0” (Shen: column 5, lines 20-34); and outputting said bitstream having a

code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-50), as in claim 5.

Regarding claim 6, Shen discloses that a predetermined AC coefficient is assigned as said coefficient to be left as is (Shen: column 7, lines 25-30), as specified.

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in a macro block (Shen: column 5, lines 45-60); leaving as is only one "non-zero" coefficient encountered first in scanning in said DCT block detected to contain said DCT coefficient and transcoding all the other DCT coefficients to "0" (Shen: column 7, lines 25-30); outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5); replacing an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-56); and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-58), as in claim 11.

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in an intra-macro block not accompanied by predictive coding (Shen: column 5, lines 45-60; column 8, lines 10-15); leaving as is only a DC coefficient in said DCT block detected to contain said DCT coefficient in said intra-macro block and transcoding all the other AC coefficients to "0" (Shen: column 7, lines 20-3); outputting said bitstream having a code quality thereof reduced by said

transcoding step (Shen: column 8, lines 1-5); replacing an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-52); and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-58), as in claim 13.

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in a macro block (Shen: column 5, lines 45-60); leaving as are only the first through N'th coefficients (N: natural number) in said DCT block detected to contain said DCT coefficient and transcoding all the other DCT coefficients to "0" (Shen: column 5, lines 20-34); outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5); replacing an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-52); and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-58), as in claim 14.

Regarding claim 19, Shen discloses that said plurality of bitstream transcoding methods is switched each time a picture not employing predictive coding is input (Shen: column 8, lines 10-15), as in the claim.

Regarding claim 32, Shen discloses that bitstream contains an image signal coded according to the MPEG standard (Shen: column 1, lines 25-35), as in the claim.

Shen discloses a bitstream transcoding apparatus (Shen: figures 4-5) comprising: code detecting means for analyzing a data structure of an input bitstream (Shen: column 5, lines 45-60); and DCT coefficients reducing means for leaving as is at least one "non-zero" DCT coefficient of DCT coefficients in a DCT block of said input bitstream and transcoding all the other DCT coefficients to “0” (Shen: column 7, lines 25-30) based on

a data structure analyzing result by said code detecting means (Shen: column 7, lines 1-5), as in claim 33.

Shen discloses a bitstream transcoding apparatus (Shen: figures 4-5) comprising: code detecting means for analyzing a data structure of an input bitstream (Shen: column 5, lines 45-60); DCT coefficients reducing means for leaving as is at least one "non-zero" DCT coefficient of DCT coefficients in a DCT block or said input bitstream and transcoding all the other DCT coefficients to "0" based on a data structure analyzing result by said code detecting means (Shen: column 7, lines 20-32); and macro block type transcoding method for transcoding a macro block type of said input bitstream (Shen: column 4, lines 55-65) to such a macro block type that corresponds to a processing result by said DCT coefficients reducing means based on said data structure analyzing result by said code detecting means (Shen: column 7, lines 1-5), as in claim 34.

Shen discloses a bitstream transcoding apparatus (Shen: figures 4-5) comprising: code detecting means for analyzing a data structure of an input bitstream (Shen: column 5, lines 45-60); DCT coefficients reducing means for leaving as is at least one "non-zero" DCT coefficient of DCT coefficients in a DCT block of said input bitstream and transcoding all the other DCT coefficients to "0" based on a data structure analyzing result by said code detecting means (Shen: column 7, lines 20-32); and coded block pattern transcoding method for transcoding a coded block pattern of said input bitstream to such a coded block pattern that corresponds to a processing result by said DCT coefficients reducing means based on said data structure analyzing result by said code detecting means (Shen: column 7, lines 1-5), as in claim 35.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 9-10, 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al., (hereinafter referred to as "Shen").

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient of a signal in a macro block (Shen: column 5, lines 45-60); transcoding all DCT coefficients in said DCT block of said signal concerned in said detection to "0" and changing a coded block pattern correspondingly

(Shen: column 7, lines 20-32); and outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 9. However, Shen fails to explicitly disclose a chrominance signal processing as in the claim. It is noted that Shen discloses that the video signal processes luminance signals (Shen: column 4, lines 45-48), and further that the input signal also includes color signals to be quantized (Shen: column 1, lines 50-60), and the signal is converted into an MPEG standard signal (Shen: column 1, lines 25-35) and processed on a macroblock level when in MPEG means four blocks of luminance information and two blocks corresponding chrominance information (Shen: column 4, lines 55-65). Accordingly, given this information, it would have been obvious for one of ordinary skill in the art to have the color information converted to chrominance information in order to reduce the number of quantization matrices need for the transcoding method (Shen: column 1, lines 50-65). Then Shen method, now modified to include chrominance signal processing, has all of the features of claim 9.

Shen discloses bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient (Shen: column 5, lines 45-60) of signal in a macro block (Shen: column 4, lines 55-65); leaving as is only one "non-zero" coefficient encountered first in scanning in said DCT block containing said DCT coefficient of said luminance signal (Shen: column 4, lines 45-50) in a macro block (Shen: column 4, lines 55-65) corresponding to said DCT block of said signal concerned in said detection and transcoding all the other DCT coefficients to "0" (Shen: column 7, lines 20-32); transcoding all DCT coefficients in said DCT block of said signal concerned

in said detection to "0" (Shen: column 5, lines 20-30); and changing a coded block pattern correspondingly (Shen: column 7, lines 1-5); and outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 10. However, Shen fails to explicitly disclose a chrominance signal processing as in the claim. It is noted that Shen discloses that the video signal processes luminance signals (Shen: column 4, lines 45-48), and further that the input signal also includes color signals to be quantized (Shen: column 1, lines 50-60), and the signal is converted into an MPEG standard signal (Shen: column 1, lines 25-35) and processed on a macroblock level when in MPEG means four blocks of luminance information and two blocks corresponding chrominance information (Shen: column 4, lines 55-65). Accordingly, given this information, it would have been obvious for one of ordinary skill in the art to have the color information converted to chrominance information in order to reduce the number of quantization matrices need for the transcoding method (Shen: column 1, lines 50-65). Then Shen method, now modified to include chrominance signal processing, has all of the features of claim 10.

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient of a signal in a macro block (Shen: column 5, lines 45-60); transcoding all DCT coefficients in said DCT block of said signal concerned in said detection to "0" and changing a coded block pattern correspondingly (Shen: column 7, lines 20-32); outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5); replacing an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-52);

and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-67), as in claim 17. However, Shen fails to explicitly disclose a chrominance signal processing as in the claim. It is noted that Shen discloses that the video signal processes luminance signals (Shen: column 4, lines 45-48), and further that the input signal also includes color signals to be quantized (Shen: column 1, lines 50-60), and the signal is converted into an MPEG standard signal (Shen: column 1, lines 25-35) and processed on a macroblock level when in MPEG means four blocks of luminance information and two blocks corresponding chrominance information (Shen: column 4, lines 55-65). Accordingly, given this information, it would have been obvious for one of ordinary skill in the art to have the color information converted to chrominance information in order to reduce the number of quantization matrices need for the transcoding method (Shen: column 1, lines 50-65). Then Shen method, now modified to include chrominance signal processing, has all of the features of claim 17.

Shen discloses bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient (Shen: column 5, lines 45-60) of signal in a macro block (Shen: column 4, lines 55-65); leaving as is only one "non-zero" coefficient encountered first in scanning in said DCT block containing said DCT coefficient of said luminance signal (Shen: column 4, lines 45-50) in a macro block (Shen: column 4, lines 55-65) corresponding to said DCT block of said signal concerned in said detection and transcoding all the other DCT coefficients to "0" (Shen: column 7,

lines 20-32); transcoding all DCT coefficients in said DCT block of said signal concerned in said detection to "0" (Shen: column 5, lines 20-30); and changing a coded block pattern correspondingly (Shen: column 7, lines 1-5); outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5); replacing an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-52); and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-67), as in claim 18. However, Shen fails to explicitly disclose a chrominance signal processing as in the claim. It is noted that Shen discloses that the video signal processes luminance signals (Shen: column 4, lines 45-48), and further that the input signal also includes color signals to be quantized (Shen: column 1, lines 50-60), and the signal is converted into an MPEG standard signal (Shen: column 1, lines 25-35) and processed on a macroblock level when in MPEG means four blocks of luminance information and two blocks corresponding chrominance information (Shen: column 4, lines 55-65). Accordingly, given this information, it would have been obvious for one of ordinary skill in the art to have the color information converted to chrominance information in order to reduce the number of quantization matrices need for the transcoding method (Shen: column 1, lines 50-65). Then Shen method, now modified to include chrominance signal processing, has all of the features of claim 18.

6. Claims 2-3, 7-8, 12, 15-16 22-28, 30-31, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al., (hereinafter referred to as "Shen") in view of Florencio.

Shen discloses a bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in an inter-macro block (Shen: column 5, lines 45-60; column 8, lines 10-20) leaving as is only a DC coefficient in said DCT block detected to contain said DCT coefficient in said inter-macro block and transcoding all the other AC coefficients to "0" (Shen: column 7, lines 20-32); and outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 2 . However, Shen fails to disclose having the inter-macroblock accompanied by predictive coding such as a motion vector, as in the claim. But Shen does disclose that it does code an inter-modal coding method according to MPEG (Shen: column 1, lines 25-35; column 8, lines 10-20). Florencio discloses that well-known inter-coding techniques for transcoding according to MPEG include both motion compensation predictive P and B coding modes with motion vector scaling (Florencio: column 6, lines 25-67; column 7, line s1-15) and are employed in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 2.

Regarding claim 3, the Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, wherein if said DC coefficient is "0", a

predetermined AC coefficient is assigned as said coefficient to be left as is (Shen: column 7, lines 20-32), as in the claim.

Shen discloses a bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a macro block type (Shen: column 4, lines 60-65) indicates "... containing of a block having a DCT coefficient" (Shen column 5, lines 20-25 and 45-60); transcoding all DCT coefficients in a macro block concerned in said detection to "0" and transcoding said macro block type to such a type that indicates " having no DCT coefficient" (Shen: column 7, lines 20-32); outputting said bitstream having a and code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 7. However, Shen fails to disclose performing motion compensation, as in the claim. But Shen does disclose that it does code an inter-modal coding method according to MPEG (Shen: column 1, lines 25-35; column 8, lines 10-20). Florencio discloses that well-known inter-coding techniques for transcoding according to MPEG include both motion compensation predictive P and B coding modes with motion vector scaling (Florencio: column 6, lines 25-67; column 7, line s1-15) and are employed in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 7.

Shen discloses a bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure or a bitstream to be input to thereby detect whether a macro block type (Shen: column 4, lines 60-65) indicates "...containing of a block having a DCT coefficient (Shen: column 5, lines 45-60), and being a variation point in a quantization step" (Shen: column 6, lines 45-50); transcoding all DCT coefficients in a macro block concerned in said detection to "0" and transcoding said macro block type to such a type that indicates " having no DCT coefficient" (Shen: column 7, lines 20-32); and outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, line 1-5), as in claim 8. However, Shen fails to disclose performing motion compensation, as in the claim. But Shen does disclose that it does code an inter-modal coding method according to MPEG (Shen: column 1, lines 25-35; column 8, lines 10-20). Florencio discloses that well-known inter-coding techniques for transcoding according to MPEG include both motion compensation predictive P and B coding modes with motion vector scaling (Florencio: column 6, lines 25-67; column 7, line s1-15) and are employed in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 8.

Shen discloses a bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a

relevant DCT block contains a DCT coefficient in an inter-macro block (Shen: column 5, lines 45-60; column 8, lines 10-20); leaving as is only a DC coefficient in said DCT block detected to contain said DCT coefficient in said inter-macro block and transcoding all the other AC coefficients to "0" (Shen: column 7, lines 20-30); outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5); replacing an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-52); and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-67), as in claim 12. However, Shen fails to disclose having the inter-macroblock accompanied by predictive coding such as a motion vector, as in the claim. But Shen does disclose that it does code an inter-modal coding method according to MPEG (Shen: column 1, lines 25-35; column 8, lines 10-20). Florencio discloses that well-known inter-coding techniques for transcoding according to MPEG include both motion compensation predictive P and B coding modes with motion vector scaling (Florencio: column 6, lines 25-67; column 7, line s1-15) and are employed in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporating Florencio's

motion compensation predictive P and B coding modes, has all of the features of claim 12.

Shen discloses a bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a macro block type (Shen: column 4, lines 60-65) indicates "... containing of a block having a DCT coefficient" (Shen column 5, lines 20-25 and 45-60); transcoding all DCT coefficients in a macro block concerned in said detection to "0" and transcoding said macro block type to such a type that indicates " having no DCT coefficient" (Shen: column 7, lines 20-32); outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5); replacing an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-52); and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-67), as in claim 15. However, Shen fails to disclose performing motion compensation, as in the claim. But Shen does disclose that it does code an inter-modal coding method according to MPEG (Shen: column 1, lines 25-35; column 8, lines 10-20). Florencio discloses that well-known inter-coding techniques for transcoding according to MPEG include both motion compensation predictive P and B coding modes with motion vector scaling (Florencio: column 6, lines 25-67; column 7, lines 1-15) and are employed in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes

as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 15.

Shen discloses a bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure or a bitstream to be input to thereby detect whether a macro block type (Shen: column 4, lines 60-65) indicates "...containing of a block having a DCT coefficient (Shen: column 5, lines 45-60), and being a variation point in a quantization step" (Shen: column 6, lines 45-50); transcoding all DCT coefficients in a macro block concerned in said detection to "0" and transcoding said macro block type to such a type that indicates " having no DCT coefficient" (Shen: column 7, lines 20-32); outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5); replacing an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-52); and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-67), as in claim 16. However, Shen fails to disclose performing motion compensation, as in the claim. But Shen does disclose that it does code an inter-modal coding method according to MPEG (Shen: column 1, lines 25-35; column 8, lines 10-20). Florencio discloses that well-known inter-coding techniques for transcoding according to MPEG include both motion compensation predictive P and B coding modes with motion vector scaling (Florencio: column 6, lines 25-67; column 7, lines 1-15) and are employed in order to encode picture sequences more

efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 16.

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in a macro block (Shen: column 5, lines 45-60); leaving as is only one "non-zero" coefficient encountered first in scanning in said DCT block detected to contain said DCT coefficient and transcoding all the other DCT coefficients to "0" (Shen: column 7, lines 1-22); and outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 22. However, Shen fails to disclose transcoding with motion compensation further including the steps of: setting at level 1 such a case that performs the transcoding method on a picture employing bilateral prediction; setting at level 2 such a case that performs a transcoding method of replacing a picture employing bilateral prediction with a dummy picture; setting at level 3 such a case that performs the transcoding method on a picture employing forward prediction; setting at level 4 such a case that performs a transcoding method of replacing a picture employing forward prediction with a dummy picture; setting at level 5 such a case that performs a transcoding method of replacing a picture not employing predictive coding with a dummy picture at a predetermined rate; detecting

an instruction for switching said plurality of levels 1 through 5; and switching said levels each time said switching instruction is received, as in claim 22. Florencio discloses a transcoding method with motion compensation further (Florencio: figures 2, 3A-3B) including the steps of: setting at level 1 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing bilateral prediction (Florencio: column 6, lines 60-67); setting at level 2 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture employing bilateral prediction (Florencio: column 6, lines 60-67) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 3 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing forward prediction (Florencio: column 6, lines 30-42); setting at level 4 such a case that performs a transcoding method (Florencio: column 5, lines 30-42) of replacing a picture employing forward prediction (Florencio: column 6, lines 30-42) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 5 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture not employing predictive coding (Florencio: column 6, lines 30-42) with a dummy picture at a predetermined rate (Florencio: column 8, lines 35-67; column 9, lines 1-10); detecting an instruction for switching said plurality of levels 1 through 5 (Florencio: column 7, lines 5-30); and switching said levels each time said switching instruction is received (Florencio: column 5, lines 1-23) in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-

macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 22.

Shen discloses a bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in a macro block (Shen: column 5, lines 45-60); leaving as are only the first through N'th coefficients (N: natural number) in said DCT block detected to contain said DCT coefficient and transcoding all the other DCT coefficients to "0" (Shen: column 5, lines 20-34); and outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-50), as in claim 23. However, Shen fails to disclose transcoding with motion compensation further including the steps of: setting at level 1 such a case that performs the transcoding method on a picture employing bilateral prediction; setting at level 2 such a case that performs a transcoding method of replacing a picture employing bilateral prediction with a dummy picture; setting at level 3 such a case that performs the transcoding method on a picture employing forward prediction; setting at level 4 such a case that performs a transcoding method of replacing a picture employing forward prediction with a dummy picture; setting at level 5 such a case that performs a transcoding method of replacing a picture not employing predictive coding with a dummy picture at a predetermined rate; detecting an instruction for switching said plurality of levels 1 through 5; and switching said levels each time said switching instruction is received, as in claim 23. Florencio discloses a transcoding method with motion compensation further (Florencio: figures 2, 3A-3B)

including the steps of: setting at level 1 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing bilateral prediction (Florencio: column 6, lines 60-67); setting at level 2 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture employing bilateral prediction (Florencio: column 6, lines 60-67) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 3 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing forward prediction (Florencio: column 6, lines 30-42); setting at level 4 such a case that performs a transcoding method (Florencio: column 5, lines 30-42) of replacing a picture employing forward prediction (Florencio: column 6, lines 30-42) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 5 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture not employing predictive coding (Florencio: column 6, lines 30-42) with a dummy picture at a predetermined rate (Florencio: column 8, lines 35-67; column 9, lines 1-10); detecting an instruction for switching said plurality of levels 1 through 5 (Florencio: column 7, lines 5-30); and switching said levels each time said switching instruction is received (Florencio: column 5, lines 1-23) in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now

incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 23.

Regarding claim 24, the Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has the steps of: setting at level 1 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing bilateral prediction (Florencio: column 6, lines 60-67); setting at level 2 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture employing bilateral prediction (Florencio: column 6, lines 60-67) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 3 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing forward prediction (Florencio: column 6, lines 30-42); setting at level 4 such a case that performs a transcoding method (Florencio: column 5, lines 30-42) of replacing a picture employing forward prediction (Florencio: column 6, lines 30-42) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 5 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture not employing predictive coding (Florencio: column 6, lines 30-42) with a dummy picture at a predetermined rate (Florencio: column 8, lines 35-67; column 9, lines 1-10); detecting an instruction for switching said plurality of levels 1 through 5 (Florencio: column 7, lines 5-30); and switching said levels each time said switching instruction is received (Florencio: column 5, lines 1-23), as in the claim.

Regarding claim 25, the Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has the steps of: setting at level 1 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture

employing bilateral prediction (Florencio: column 6, lines 60-67); setting at level 2 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture employing bilateral prediction (Florencio: column 6, lines 60-67) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 3 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing forward prediction (Florencio: column 6, lines 30-42); setting at level 4 such a case that performs a transcoding method (Florencio: column 5, lines 30-42) of replacing a picture employing forward prediction (Florencio: column 6, lines 30-42) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 5 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture not employing predictive coding (Florencio: column 6, lines 30-42) with a dummy picture at a predetermined rate (Florencio: column 8, lines 35-67; column 9, lines 1-10); detecting an instruction for switching said plurality of levels 1 through 5 (Florencio: column 7, lines 5-30); and switching said levels each time said switching instruction is received (Florencio: column 5, lines 1-23), as in the claim.

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient of a signal in a macro block (Shen: column 5, lines 45-60); transcoding all DCT coefficients in said DCT block of said signal concerned in said detection to "0" and changing a coded block pattern correspondingly (Shen: column 7, lines 20-32); and outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 26. However, Shen fails to explicitly disclose a chrominance signal processing and motion

compensation further including the steps of: setting at level 1 such a case that performs the transcoding method on a picture employing bilateral prediction; setting at level 2 such a case that performs a transcoding method of replacing a picture employing bilateral prediction with a dummy picture; setting at level 3 such a case that performs the transcoding method on a picture employing forward prediction; setting at level 4 such a case that performs a transcoding method of replacing a picture employing forward prediction with a dummy picture; setting at level 5 such a case that performs a transcoding method of replacing a picture not employing predictive coding with a dummy picture at a predetermined rate; detecting an instruction for switching said plurality of levels 1 through 5; and switching said levels each time said switching instruction is received, as in the claim. It is noted that Shen discloses that the video signal processes luminance signals (Shen: column 4, lines 45-48), and further that the input signal also includes color signals to be quantized (Shen: column 1, lines 50-60), and the signal is converted into an MPEG standard signal (Shen: column 1, lines 25-35) and processed on a macroblock level when in MPEG means four blocks of luminance information and two blocks corresponding chrominance information (Shen: column 4, lines 55-65). Accordingly, given this information, it would have been obvious for one of ordinary skill in the art to have the color information converted to chrominance information in order to reduce the number of quantization matrices need for the transcoding method (Shen: column 1, lines 50-65). Then Shen method, now modified to include chrominance signal processing, has a majority of the features of claim 26. However, Shen as modified to include chrominance signal processing fails to disclose transcoding with motion compensation further including the steps of: setting at level 1 such a case that performs

the transcoding method on a picture employing bilateral prediction; setting at level 2 such a case that performs a transcoding method of replacing a picture employing bilateral prediction with a dummy picture; setting at level 3 such a case that performs the transcoding method on a picture employing forward prediction; setting at level 4 such a case that performs a transcoding method of replacing a picture employing forward prediction with a dummy picture; setting at level 5 such a case that performs a transcoding method of replacing a picture not employing predictive coding with a dummy picture at a predetermined rate; detecting an instruction for switching said plurality of levels 1 through 5; and switching said levels each time said switching instruction is received, as in claim 26. Florencio discloses a transcoding method with motion compensation further (Florencio: figures 2, 3A-3B) including the steps of: setting at level 1 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing bilateral prediction (Florencio: column 6, lines 60-67); setting at level 2 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture employing bilateral prediction (Florencio: column 6, lines 60-67) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 3 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing forward prediction (Florencio: column 6, lines 30-42); setting at level 4 such a case that performs a transcoding method (Florencio: column 5, lines 30-42) of replacing a picture employing forward prediction (Florencio: column 6, lines 30-42) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 5 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture not employing predictive coding (Florencio: column 6,

lines 30-42) with a dummy picture at a predetermined rate (Florencio: column 8, lines 35-67; column 9, lines 1-10); detecting an instruction for switching said plurality of levels 1 through 5 (Florencio: column 7, lines 5-30); and switching said levels each time said switching instruction is received (Florencio: column 5, lines 1-23) in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now modified to include chrominance signal processing and incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 26.

Shen discloses bitstream transcoding method (Shen: figure 8) comprising the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient (Shen: column 5, lines 45-60) of signal in a macro block (Shen: column 4, lines 55-65); leaving as is only one "non-zero" coefficient encountered first in scanning in said DCT block containing said DCT coefficient of said luminance signal (Shen: column 4, lines 45-50) in a macro block (Shen: column 4, lines 55-65) corresponding to said DCT block of said signal concerned in said detection and transcoding all the other DCT coefficients to "0" (Shen: column 7, lines 20-32); transcoding all DCT coefficients in said DCT block of said signal concerned in said detection to "0" (Shen: column 5, lines 20-30); and changing a coded block pattern correspondingly (Shen: column 7, lines 1-5); and outputting said bitstream having

a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5), as in claim 27. However, Shen fails to explicitly disclose a chrominance signal processing and motion compensation further including the steps of: setting at level 1 such a case that performs the transcoding method on a picture employing bilateral prediction; setting at level 2 such a case that performs a transcoding method of replacing a picture employing bilateral prediction with a dummy picture; setting at level 3 such a case that performs the transcoding method on a picture employing forward prediction; setting at level 4 such a case that performs a transcoding method of replacing a picture employing forward prediction with a dummy picture; setting at level 5 such a case that performs a transcoding method of replacing a picture not employing predictive coding with a dummy picture at a predetermined rate; detecting an instruction for switching said plurality of levels 1 through 5; and switching said levels each time said switching instruction is received, as in the claim. It is noted that Shen discloses that the video signal processes luminance signals (Shen: column 4, lines 45-48), and further that the input signal also includes color signals to be quantized (Shen: column 1, lines 50-60), and the signal is converted into an MPEG standard signal (Shen: column 1, lines 25-35) and processed on a macroblock level when in MPEG means four blocks of luminance information and two blocks corresponding chrominance information (Shen: column 4, lines 55-65). Accordingly, given this information, it would have been obvious for one of ordinary skill in the art to have the color information converted to chrominance information in order to reduce the number of quantization matrices need for the transcoding method (Shen: column 1, lines 50-65). Then Shen method, now modified to include chrominance signal processing, has a majority of the features of claim 27. However, Shen as modified to

include chrominance signal processing fails to disclose transcoding with motion compensation further including the steps of: setting at level 1 such a case that performs the transcoding method on a picture employing bilateral prediction; setting at level 2 such a case that performs a transcoding method of replacing a picture employing bilateral prediction with a dummy picture; setting at level 3 such a case that performs the transcoding method on a picture employing forward prediction; setting at level 4 such a case that performs a transcoding method of replacing a picture employing forward prediction with a dummy picture; setting at level 5 such a case that performs a transcoding method of replacing a picture not employing predictive coding with a dummy picture at a predetermined rate; detecting an instruction for switching said plurality of levels 1 through 5; and switching said levels each time said switching instruction is received, as in claim 27. Florencio discloses a transcoding method with motion compensation further (Florencio: figures 2, 3A-3B) including the steps of: setting at level 1 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing bilateral prediction (Florencio: column 6, lines 60-67); setting at level 2 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture employing bilateral prediction (Florencio: column 6, lines 60-67) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10); setting at level 3 such a case that performs the transcoding method (Florencio: column 5, lines 30-50) on a picture employing forward prediction (Florencio: column 6, lines 30-42); setting at level 4 such a case that performs a transcoding method (Florencio: column 5, lines 30-42) of replacing a picture employing forward prediction (Florencio: column 6, lines 30-42) with a dummy picture (Florencio: column 8, lines 35-67; column 9, lines 1-10);

setting at level 5 such a case that performs a transcoding method (Florencio: column 5, lines 30-50) of replacing a picture not employing predictive coding (Florencio: column 6, lines 30-42) with a dummy picture at a predetermined rate (Florencio: column 8, lines 35-67; column 9, lines 1-10); detecting an instruction for switching said plurality of levels 1 through 5 (Florencio: column 7, lines 5-30); and switching said levels each time said switching instruction is received (Florencio: column 5, lines 1-23) in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate Florencio's motion compensation predictive P and B coding modes as the inter-macroblock coding modes of Shen in order to have the Shen method to encode MPEG picture sequences more efficiently with restricted bandwidth. The Shen method, now modified to include chrominance signal processing and incorporating Florencio's motion compensation predictive P and B coding modes, has all of the features of claim 27.

Regarding claim 28, the Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has the step of switching said levels is performed each time a picture not employing predictive coding is input (Shen: column 8, lines 10-20).

Regarding claim 30, the Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has the switching said levels is performed each predetermined time interval (Florencio: column 7, lines 15-40), as in the claim.

Regarding claim 31, the Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has the switching said one of said plurality of levels is left as is to thereby remove any desired one or any desired plurality of said levels remaining (Florencio: column 5, lines 20-65), as in the claim.

Shen discloses a procedure for analyzing a data structure of an input bitstream (Shen: column 5, lines 45-60); and a procedure for leaving as is at least one "non-zero" DCT coefficient of DCT coefficients in a DCT block of said input bitstream and transcoding all the other DCT coefficients to "0" based on said data structure analyzing result by said data structure analyzing procedure (Shen: column 7, lines 1-30), as in claim 36. However, Shen fails to disclose implementing said procedures on a computer readable medium by means of software instructions. Florencio discloses that it known to implement transcoding procedures Florencio: column 6, lines 25-67; column 7, line s1-15) in a computer readable medium by means of software instructions (Florencio: column 9, lines 10-32) in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate the Shen method as a set of software instructions resident on a computer readable medium as shown by Florencio in order to encode picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporated as software instructions on a computer readable medium as shown by Florencio, has all of the features of claim 36.

Shen discloses a procedure for analyzing a data structure of an input bitstream (Shen: column 5, lines 45-60); a procedure for leaving as is at least one "non-zero" DCT coefficient of DCT coefficients in a DCT block of said input bitstream and transcoding

all the other DCT coefficients to "0" based on said data structure analyzing result by said data structure analyzing procedure (Shen: column 5, lines 20-30); and a procedure for transcoding a macro block type of said input bitstream to such a macro block type (Shen: column 4, lines 55-65) that corresponds to a processing result by said DCT coefficient transcoding procedure based on said data structure analyzing result (Shen: column 7, lines 20-32), as in claim 37. However, Shen fails to disclose implementing said procedures on a computer readable medium by means of software instructions. Florencio discloses that it known to implement transcoding procedures Florencio: column 6, lines 25-67; column 7, line s1-15) in a computer readable medium by means of software instructions (Florencio: column 9, lines 10-32) in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate the Shen method as a set of software instructions resident on a computer readable medium as shown by Florencio in order to encode picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporated as software instructions on a computer readable medium as shown by Florencio, has all of the features of claim 37.

Shen discloses a procedure for analyzing a data structure of an input bitstream (Shen: column 5, lines 45-60); a procedure for leaving as is at least one "non-zero" DCT coefficient of DCT coefficients in a DCT block of said input bitstream and transcoding all the other DCT coefficients to “0” based on said data structure analyzing result by said data structure analyzing procedure (Shen: column 5, lines 20-30); and a procedure for transcoding a coded block pattern of said input bitstream to such a coded block pattern

that corresponds to a processing result by said DCT coefficient transcoding procedure based on said data structure analyzing result (Shen: column 6, lines 50-67; column 7, lines 1-7), as in claim 38. However, Shen fails to disclose implementing said procedures on a computer readable medium by means of software instructions. Florencio discloses that it known to implement transcoding procedures Florencio: column 6, lines 25-67; column 7, line s1-15) in a computer readable medium by means of software instructions (Florencio: column 9, lines 10-32) in order to encode picture sequences more efficiently with restricted bandwidth (Florencio: column 2, lines 13-25). Accordingly, given this teaching, it would have been obvious for one of ordinary skill in the art to incorporate the Shen method as a set of software instructions resident on a computer readable medium as shown by Florencio in order to encode picture sequences more efficiently with restricted bandwidth. The Shen method, now incorporated as software instructions on a computer readable medium as shown by Florencio, has all of the features of claim 38.

7. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al., (hereinafter referred to as "Shen") in view of Smith et al., (hereinafter referred to as "Smith").

Shen discloses a bitstream transcoding method comprising (Shen: figure 8) the steps of: analyzing a data structure of a bitstream to be input to thereby detect whether a relevant DCT block contains a DCT coefficient in a macro block (Shen: column 5, lines 45-60); leaving as is only one "non-zero" coefficient encountered first in scanning in said DCT block detected to contain said DCT coefficient and transcoding all the other DCT coefficients to "0" (Shen: column 7, lines 25-30); outputting said bitstream having a code quantity thereof reduced by said transcoding step (Shen: column 8, lines 1-5); replacing

an individual picture in said bitstream to be input with a dummy picture (Shen: column 7, lines 45-56); and outputting said bitstream having a code quantity reduced by said replacing step, wherein the above-mentioned plurality of bitstream transcoding methods having different aspects is switched appropriately in configuration (Shen: column 6, lines 45-58), as in claims 20-21. However, the Shen method fails to disclose switching each time a GOP header is input, as in the claim, even though Shen discloses the use of a MPEG standard stream (Shen: column 1, lines 35-45). Smith discloses that for transcoding, it is known to use the GOP header of an input sequence to store time code information in order to aid in switching video image processing (Smith: column 10, lines 30-65). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art to incorporate the use of the Smith's teaching of using GOP headers into the Shen method in order to allow for switching in video processing. The Shen method, now incorporating Smith's teaching of using GOP headers, has all of the features of claims 20-21.

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al., (hereinafter referred to as "Shen") in view of Florencio as applied to claim 22 above, and further in view of Smith et al., (hereinafter referred to as "Smith").

The Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes, has a majority of the features of claim 29, as has been discussed concerning parent claim 22. However, the Shen-Florencio method fails to disclose switching each time a GOP header is input, as in the claim, even though Shen discloses the use of a MPEG standard stream (Shen: column 1, lines 35-45). Smith discloses that for transcoding, it is known to use the GOP header of an input sequence to store time

code information in order to aid in switching video image processing (Smith: column 10, lines 30-65). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art to incorporate the use of the Smith's teaching of using GOP headers into the Shen method in order to allow for switching in video processing. The Shen method, now incorporating Florencio's motion compensation predictive P and B coding modes and Smith's teaching of using GOP headers, has all of the features of claim 29.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Meehan discloses a method and apparatus for evaluating the syntax elements for DCT coefficients of a video decoder.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (703)-305-4813. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris S. Kelley can be reached on (703)-305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andy S. Rao
Primary Examiner
Art Unit 2613

asr
August 4, 2004

ANDY RAO
PRIMARY EXAMINER